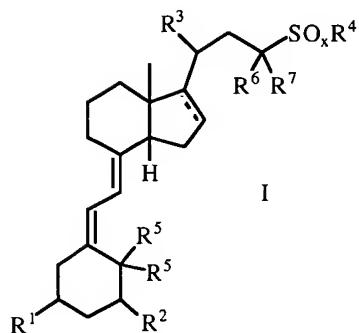


**WE CLAIM:**

1. A compound of Formula I, and pharmaceutically acceptable salts, hydrates, solvates and prodrugs thereof:

5



wherein

R<sup>1</sup> and R<sup>2</sup> are independently selected from the group consisting of OH, OC<sub>1-4</sub>alkyl, and halo;

10 R<sup>3</sup> is C<sub>1-4</sub>alkyl;

R<sup>4</sup> is selected from the group consisting of C<sub>1-6</sub>alkyl, aryl and heteroaryl with both aryl and heteroaryl being unsubstituted or substituted with 1-5 groups independently selected from C<sub>1-4</sub>alkyl, hydroxy-substituted C<sub>1-6</sub>alkyl, OC<sub>1-4</sub>alkyl, OH, CF<sub>3</sub>, OCF<sub>3</sub>, halo, SH, SC<sub>1-4</sub>alkyl, NH<sub>2</sub>, NHC<sub>1-4</sub>alkyl, N(C<sub>1-4</sub>alkyl)(C<sub>1-4</sub>alkyl), CN, C(O)OH, C(O)OC<sub>1-4</sub>alkyl,

15 C(O)NHC<sub>1-4</sub>alkyl, CH=N-OC<sub>1-4</sub>alkyl, NHC(O)C<sub>1-4</sub>alkyl, OC(O)C<sub>1-4</sub>alkyl, SOC<sub>1-4</sub>alkyl, SO<sub>2</sub>C<sub>1-4</sub>alkyl, SO<sub>2</sub>NHC<sub>1-4</sub>alkyl and SO<sub>2</sub>NH<sub>2</sub>;

R<sup>5</sup> are either both H or together form =CH<sub>2</sub>;

R<sup>6</sup> and R<sup>7</sup> are independently H, C<sub>1-4</sub>alkyl or are taken together to form a C<sub>3-6</sub>cyloalkyl ring;

20 x is 0-2; and

— represents a single or a double bond.

2. The compound according to claim 1, wherein R<sup>1</sup> and R<sup>2</sup> are independently selected from the group consisting OH, OCH<sub>3</sub>, and fluoro.

3. The compound according to claim 2, wherein R<sup>1</sup> and R<sup>2</sup> are both OH.

4. The compound according to claim 1, wherein R<sup>3</sup> is CH<sub>3</sub>.

5

5. The compound according to claim 1, wherein R<sup>4</sup> is selected from the group consisting of unsubstituted and substituted phenyl, pyridyl, thienyl, furanyl and pyrrolo.

6. The compound according to claim 5, wherein R<sup>4</sup> is selected from unsubstituted or  
10 substituted phenyl.

7. The compound according to claim 1, wherein both aryl and heteroaryl are either  
unsubstituted or substituted with 1-3 groups independently selected from C<sub>1-4</sub>alkyl,  
hydroxy-substituted C<sub>1-6</sub>alkyl, OC<sub>1-4</sub>alkyl, OH, CF<sub>3</sub>, OCF<sub>3</sub>, halo, SH, SC<sub>1-4</sub>alkyl, NH<sub>2</sub>,  
15 NHC<sub>1-4</sub>alkyl, N(C<sub>1-4</sub>alkyl)(C<sub>1-4</sub>alkyl), CN, C(O)OH, C(O)OC<sub>1-4</sub>alkyl, CH=N-OC<sub>1-4</sub>alkyl,  
C(O)NHC<sub>1-4</sub>alkyl, NHC(O)C<sub>1-4</sub>alkyl, OC(O)C<sub>1-4</sub>alkyl, SOC<sub>1-4</sub>alkyl, SO<sub>2</sub>C<sub>1-4</sub>alkyl,  
SO<sub>2</sub>NHC<sub>1-4</sub>alkyl and SO<sub>2</sub>NH<sub>2</sub>.

8. The compound according to claim 7, wherein both aryl and heteroaryl are either  
20 unsubstituted or substituted with 1-2 groups independently selected from methyl, 3-  
hydroxy-3-pentyl, methoxy, OH, CF<sub>3</sub>, OCF<sub>3</sub>, halo, NH<sub>2</sub>, NMe<sub>2</sub> and CH=N-OMe.

9. The compound according to claim 8, wherein both aryl and heteroaryl are either  
unsubstituted or substituted with 1-2 groups independently selected from methyl, 3-  
25 hydroxy-3-pentyl, Cl, F and CH=N-OMe.

10. The compound according to claim 6, wherein R<sup>4</sup> is selected from the group  
consisting of phenyl, 4-chlorophenyl, 3,4-dichlorophenyl, 4-fluorophenyl, 4-

methylphenyl, 3,4-difluorophenyl, 4-(3-hydroxy-3-pentyl)phenyl, 4-(CH=N-OMe)phenyl, 4-methoxyphenyl, 4-trifluormethylphenyl and 4-nitrophenyl.

11. The compound according to claim 10, wherein R<sup>4</sup> is selected from the group  
5 consisting of 4-chlorophenyl, 3,4-dichlorophenyl, 4-(3-hydroxy-3-pentyl)phenyl, 4-fluorophenyl and 4-methylphenyl.

12. The compound according to claim 1, wherein R<sup>6</sup> and R<sup>7</sup> are independently H, methyl or are taken together to form a C<sub>3-4</sub>cyloalkyl ring.

10

13. The compound according to claim 12, wherein R<sup>6</sup> and R<sup>7</sup> are both H or are taken together to form a C<sub>3-4</sub>cyloalkyl ring.

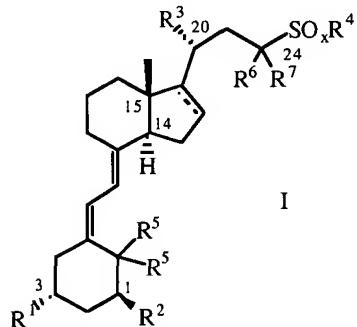
14. The compound according to claim 1, wherein x is 2.

15

15. The compound according to claim 1, wherein --- represents a single bond.

16. A compound of Formula I, and pharmaceutically acceptable salts, hydrates, solvates and prodrugs thereof:

20



wherein

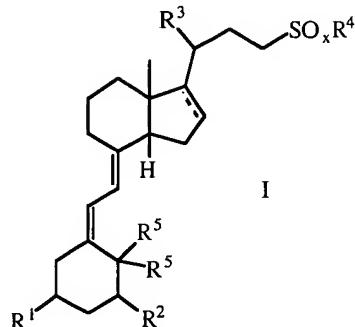
R<sup>1</sup> and R<sup>2</sup> are independently selected from the group consisting of OH, OC<sub>1-4</sub>alkyl, and halo;

R<sup>3</sup> is C<sub>1-4</sub>alkyl;

- R<sup>4</sup> is selected from the group consisting of aryl and heteroaryl with both aryl and  
5 heteroaryl being unsubstituted or substituted with 1-5 groups independently selected from  
C<sub>1-4</sub>alkyl, hydroxy-substituted C<sub>1-6</sub>alkyl, OC<sub>1-4</sub>alkyl; OH, CF<sub>3</sub>, OCF<sub>3</sub>, halo, SH, SC<sub>1-4</sub>alkyl,  
NH<sub>2</sub>, NHC<sub>1-4</sub>alkyl, N(C<sub>1-4</sub>alkyl)(C<sub>1-4</sub>alkyl), CN, C(O)OH, C(O)OC<sub>1-4</sub>alkyl,  
C(O)NHC<sub>1-4</sub>alkyl, NHC(O)C<sub>1-4</sub>alkyl, OC(O)C<sub>1-4</sub>alkyl, SOC<sub>1-4</sub>alkyl, SO<sub>2</sub>C<sub>1-4</sub>alkyl,  
SO<sub>2</sub>NHC<sub>1-4</sub>alkyl and SO<sub>2</sub>NH<sub>2</sub>;
- 10 R<sup>5</sup> are either both H or together form =CH<sub>2</sub>;
- R<sup>6</sup> and R<sup>7</sup> are independently H, C<sub>1-4</sub>alkyl or are taken together to form a C<sub>3-6</sub>cycloalkyl  
ring;
- x is 0-2; and
- represents a single or a double bond.

15

17. A compound of Formula I, and pharmaceutically acceptable salts, hydrates,  
solvates and prodrugs thereof:



20 wherein

R<sup>1</sup> and R<sup>2</sup> are independently selected from the group consisting of OH, OC<sub>1-4</sub>alkyl, and  
halo;

R<sup>3</sup> is C<sub>1-4</sub>alkyl;

R<sup>4</sup> is selected from the group consisting of C<sub>1-6</sub>alkyl, aryl and heteroaryl with both aryl and heteroaryl being unsubstituted or substituted with 1-5 groups independently selected from C<sub>1-4</sub>alkyl, hydroxy-substituted C<sub>1-6</sub>alkyl, OC<sub>1-4</sub>alkyl, OH, CF<sub>3</sub>, OCF<sub>3</sub>, halo, SH, SC<sub>1-4</sub>alkyl, NH<sub>2</sub>, NHC<sub>1-4</sub>alkyl, N(C<sub>1-4</sub>alkyl)(C<sub>1-4</sub>alkyl), CN, C(O)OH, C(O)OC<sub>1-4</sub>alkyl, 5 C(O)NHC<sub>1-4</sub>alkyl, CH=N-OC<sub>1-4</sub>alkyl, NHC(O)C<sub>1-4</sub>alkyl, OC(O)C<sub>1-4</sub>alkyl, SOC<sub>1-4</sub>alkyl, SO<sub>2</sub>C<sub>1-4</sub>alkyl, SO<sub>2</sub>NHC<sub>1-4</sub>alkyl and SO<sub>2</sub>NH<sub>2</sub>;

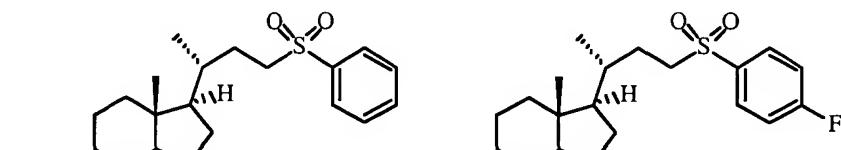
R<sup>5</sup> are either both H or together form =CH<sub>2</sub>;

x is 0-2; and

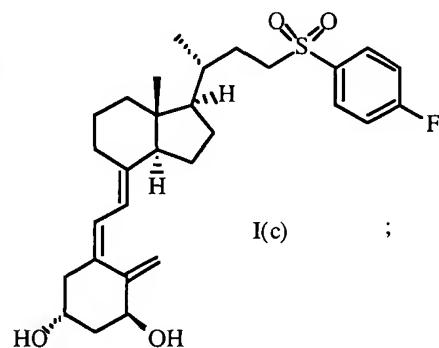
— represents a single or a double bond.

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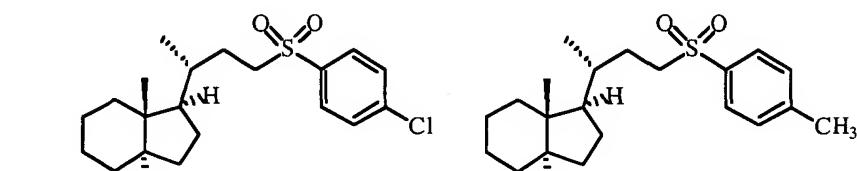
18. The compound according to claim 1 that is selected from:



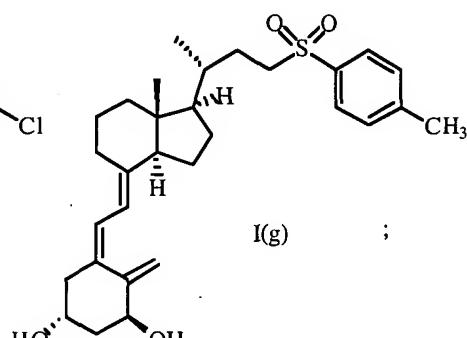
I(a)



I(c)

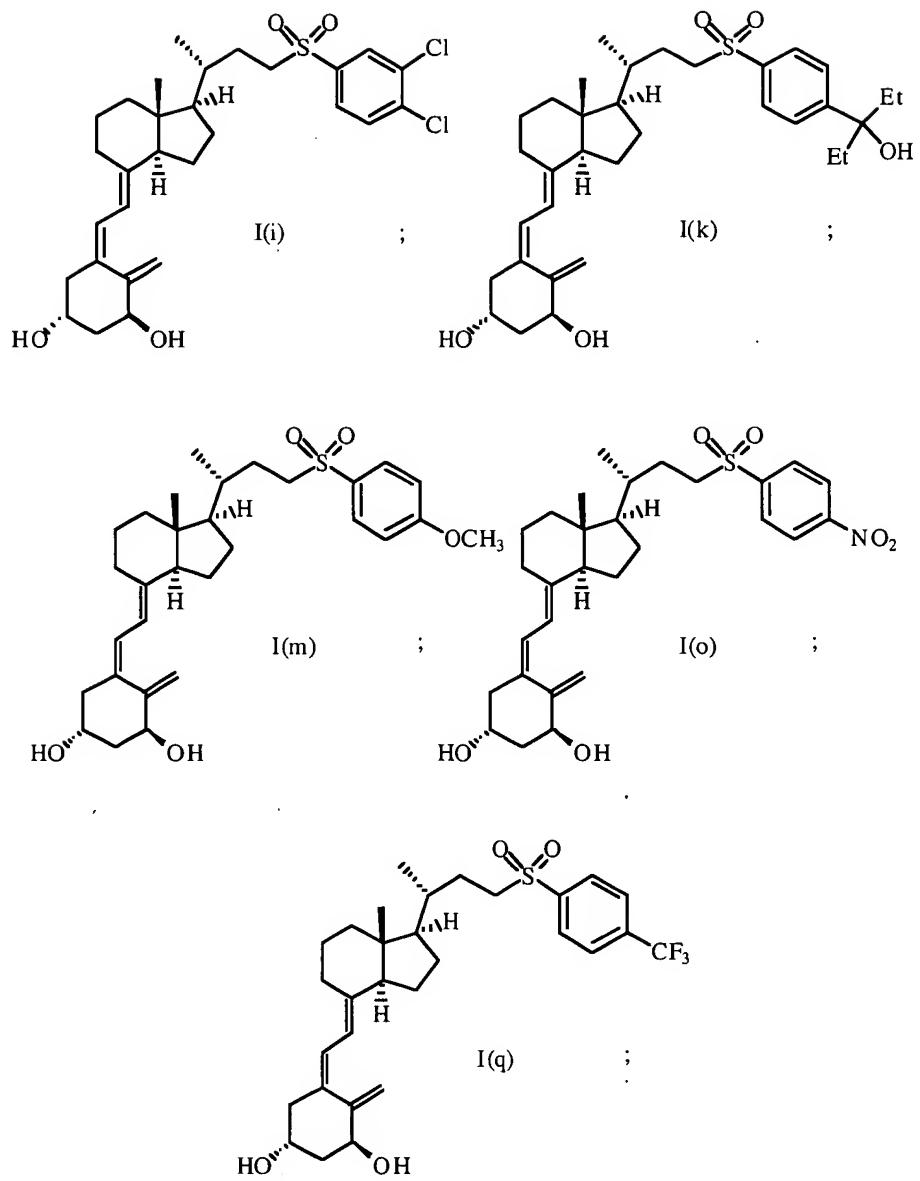


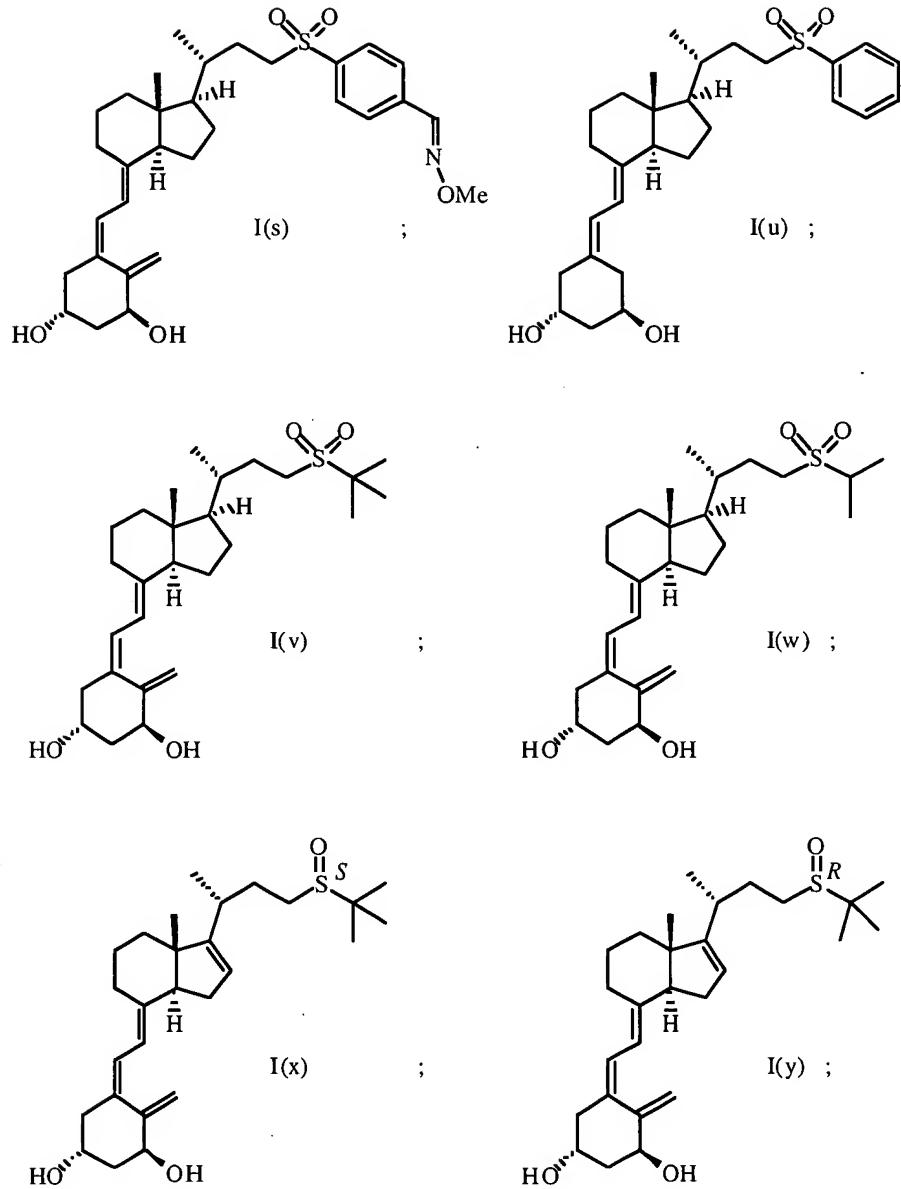
I(e)

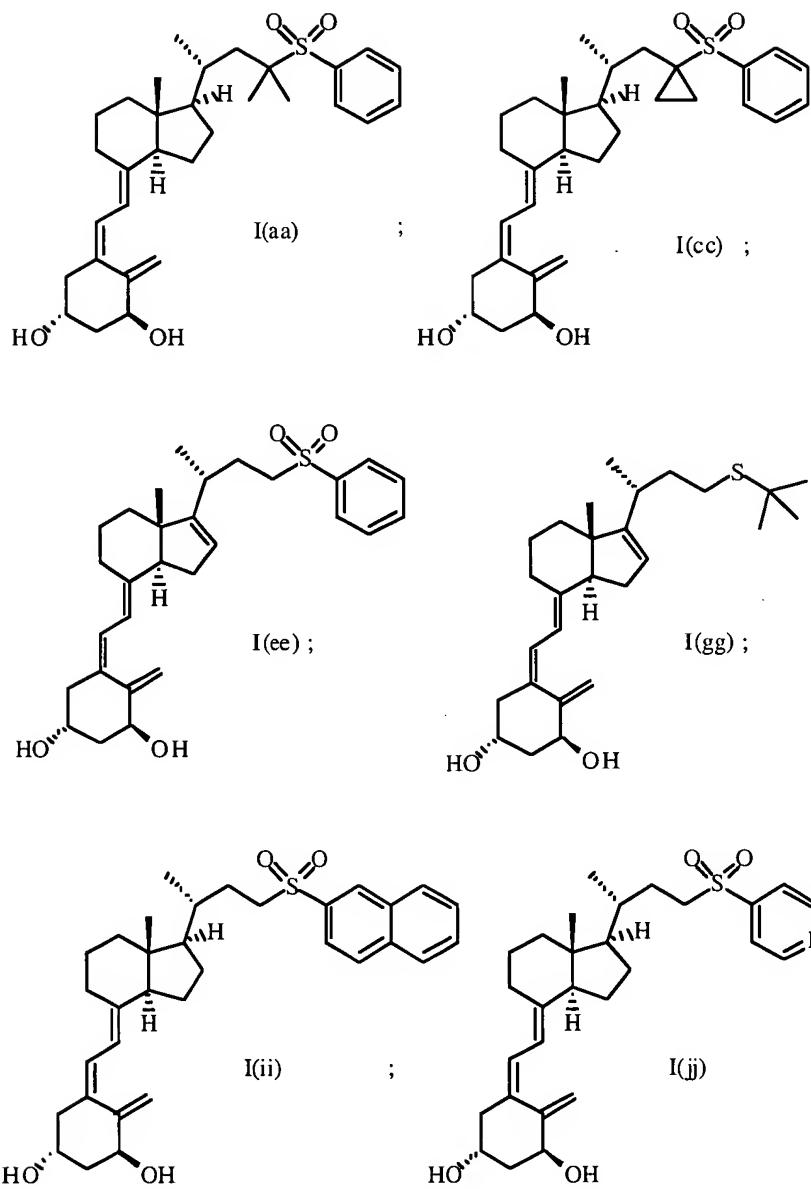


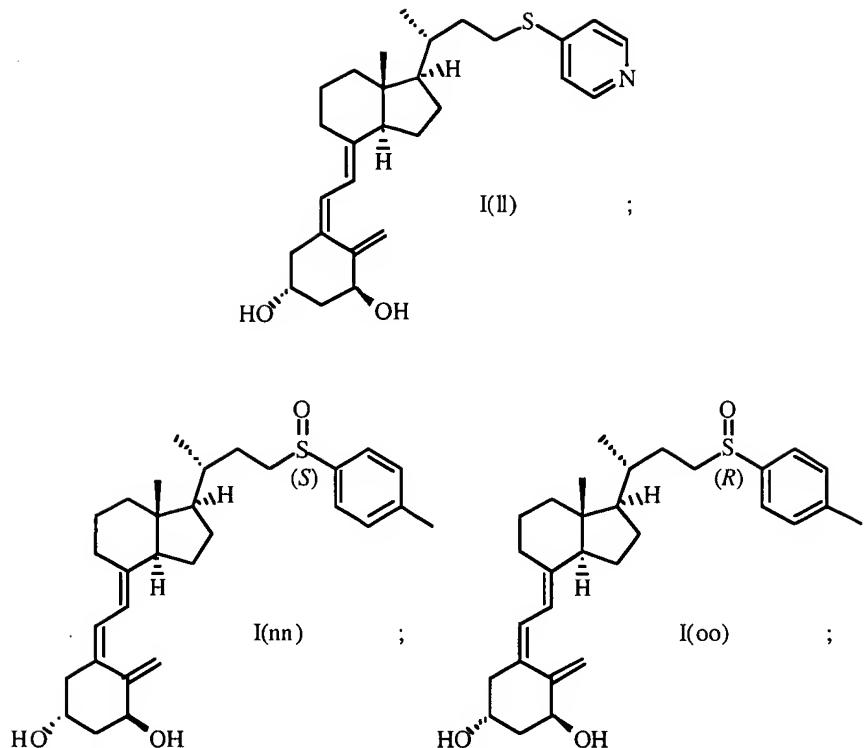
I(g)

15









and pharmaceutically acceptable salts, hydrates, solvates and prodrugs thereof.

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19. The compound according to claim 1, selected from the group consisting of I(a), I(e), I(g), I(i), I(m), I(o), I(q), I(u), I(cc), I(ee), I(jj), I(ll), I(nn) and I(oo).

20. The compound according to claim 1, selected from the group consisting of I(a),  
10 I(e), I(g), I(i), I(u), I(cc), I(ee), I(jj), I(nn) and I(oo).

21. The compound according to claim 1, selected from the group consisting of I(v),  
I(w), I(x), I(y) and I(gg).

15 22. The compound according to claim 1, selected from the group consisting of I(v),  
I(w) and I(y).

23. A pharmaceutical composition comprising a compound according to claim 1 and a pharmaceutically acceptable carrier.
  
24. A method for treating diseases which benefit from a modulation of the levels of  
5 1 $\alpha$ ,25-dihydroxy vitamin D<sub>3</sub>, or analogs thereof, comprising administering an effective amount of a compound according to claim 1 to a cell or animal in need thereof.
  
25. A method for treating diseases which benefit from an increase in the levels of  
10 1 $\alpha$ ,25-dihydroxy vitamin D<sub>3</sub>, or analogs thereof, comprising administering an effective amount of a compound according to claim 1 to a cell or animal in need thereof.
  
26. A method for treating diseases which benefit from an inhibition of the catabolism  
of 1 $\alpha$ ,25-dihydroxy vitamin D<sub>3</sub>, or analogs thereof, comprising administering an effective amount of a compound according to claim 1 to a cell or animal in need thereof.  
15
  
27. The method according to claim 26, wherein the disease is selected from the group consisting of cancer, dermatological disorders, parathyroid disorders, autoimmune disorders and bone disorders.
  
- 20 28. The method according to claim 27, wherein the disease is selected from the group consisting of cancer, psoriasis, hyperparathyroidism, secondary hyperparathyroidism and osteoporosis.
  
29. A method of inhibiting cell proliferation and/or for promoting cell differentiation  
25 comprising administering an effective amount of a compound according to claim 1 to a cell or animal in need thereof.
  
30. The method according to claim 29, wherein the cell is a cancer cell.

31. The method according to claim 30, wherein the cancer is selected from breast cancer, lung cancer, prostate cancer, colon cancer, colorectal cancer, kidney cancer, head and neck cancer, pancreatic cancer, Kaposi's sarcoma and leukemia.
- 5    32. The method according to claim 29, wherein the cell is a skin cell.
33. The method according to claim 32, wherein the cell is a keratinocyte.
- 10    34. A method of inhibiting CYP24 activity in a cell by administering an effective amount of a compound according to claim 1 to the cell.
- 15    35. A method of treating a disease which benefits from an inhibition of CYP24 activity comprising administering an effective amount of a compound according to claim 1 to an animal or cell in need thereof.
36. A use of a compound according to claim 1 to treat a disease which benefits from a modulation in the levels of  $1\alpha,25$ -dihydroxy vitamin D<sub>3</sub>, or an analog thereof.
- 20    37. A use of a compound according to claim 1 to treat a disease which benefits from an increase in the levels of  $1\alpha,25$ -dihydroxy vitamin D<sub>3</sub>, or an analog thereof.
38. A use of a compound according to claim 1 to treat a disease which benefits from an inhibition of the catabolism of  $1\alpha,25$ -dihydroxy vitamin D<sub>3</sub>, or an analog thereof.
- 25    39. A use of a compound according to claim 1 to prepare a medicament to treat a disease which benefits from an modulation of the levels of  $1\alpha,25$ -dihydroxy vitamin D<sub>3</sub>, or an analog thereof.

40. A use of a compound according to claim 1 to prepare a medicament to treat a disease which benefits from an increase in the levels of 1 $\alpha$ ,25-dihydroxy vitamin D<sub>3</sub>, or an analog thereof.
- 5 41. A use of a compound according to claim 1 to prepare a medicament to treat a disease which benefits from an inhibition of the catabolism of 1 $\alpha$ ,25-dihydroxy vitamin D<sub>3</sub>, or an analog thereof.
- 10 42. A use of a compound according to claim 1 to inhibit cell proliferation and/or promote cell differentiation.
43. A use of a compound according to claim 1 to prepare a medicament to inhibit cell proliferation and/or promote cell differentiation.
- 15 44. A use of a compound according to claim 1 to inhibit CYP24 activity.
45. A use of a compound according to claim 1 to prepare a medicament to inhibit CYP24 activity.
- 20 46. A method for increasing the efficacy of a vitamin D receptor agonist comprising co-administering an effective amount of a compound according to claim 1 and an effective amount of a vitamin D receptor agonist to an animal or cell in need thereof.
- 25 47. A method of treating diseases comprising co-administering an effective amount of a compound according to claim 1 and an effective amount of a vitamin D receptor agonist to an animal or cell in need thereof.
48. The method according to claim 47, wherein the vitamin D receptor agonist is 1 $\alpha$ ,25-dihydroxy vitamin D<sub>3</sub> (calcitriol), or an analog thereof.

49. The method according to claim 47, wherein the disease is selected from the group consisting of cancer, dermatological disorders, parathyroid disorders, autoimmune disorders and bone disorders.

5

50. The method according to claim 49, wherein the disease is selected from the group consisting of cancer, psoriasis, hyperparathyroidism, secondary hyperparathyroidism and osteoporosis.

10 51. The method according to claim 50, wherein the disease is cancer.

52. The method according to claim 51, wherein the cancer is selected from the group consisting of breast cancer, lung cancer, prostate cancer, colon cancer, colorectal cancer, kidney cancer, head and neck cancer, pancreatic cancer, Kaposi's sarcoma and leukemia.

15

53. A use of a compound according to claim 1 to increase the efficacy of a vitamin D receptor agonist.

20 54. A use of a compound according to claim 1 to prepare a medicament to increase the efficacy of a vitamin D receptor agonist.

55. A use of a compound according to claim 1 and a vitamin D receptor agonist to treat a disease which benefits from co-administering an effective amount of a compound according to claim 1 and an effective amount of a vitamin D receptor agonist.

25

56. A use of a compound according to claim 1 to prepare a medicament to treat a disease which benefits from co-administering an effective amount of a compound according to claim 1 and an effective amount of a vitamin D receptor agonist.

57. The use according to claim 55, wherein the vitamin D receptor agonist is  $1\alpha,25$ -dihydroxy vitamin D<sub>3</sub>, or an analog thereof.

58. The use according to claim 55, wherein the disease is selected from the group  
5 consisting of cancer, dermatological disorders, parathyroid disorders, autoimmune  
disorders and bone disorders.

59. The use according to claim 58, wherein the disease is selected from the group  
consisting of cancer, psoriasis, hyperparathyroidism, secondary hyperparathyroidism and  
10 osteoporosis.

60. A method of treating cancer, dermatological disorders, parathyroid disorders,  
autoimmune disorders or bone disorders comprising administering an effective amount of  
a compound according to claim 1 in combination with one or more therapies or  
15 therapeutics to treat cancer, dermatological disorders, parathyroid disorders, autoimmune  
disorders or bone disorders, to an animal or cell in need thereof.

61. A method of treating cancer comprising administering an effective amount of a  
compound according to claim 1 in combination with one or more therapies or  
20 therapeutics to treat cancer.

62. The method according to claim 61, wherein the one or more therapies or  
therapeutics to treat cancer are selected from the group consisting of surgery, radiation,  
chemotherapy and biotherapy.

25

63. A method of treating psoriasis comprising administering an effective amount of a  
compound according to claim 1 in combination with one or more therapies or  
therapeutics to treat psoriasis.

64. The method according to claim 63, wherein the one or more therapies or therapeutics to treat psoriasis are selected from the group consisting of ultraviolet B radiation, chemotherapy and biotherapy.

5 65. A use of a compound according to claim 1 in combination with one or more therapies or therapeutics to treat cancer, dermatological disorders, parathyroid disorders, autoimmune disorders or bone disorders.

10 66. A use of a compound according to claim 1 in combination with one or more therapies or therapeutics to treat cancer.

67. A use of a compound according to claim 1 in combination with one or more therapies or therapeutics to treat psoriasis.